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Testimony

Before the Subcommittees on Air and Land Forces and Seapower and Expeditionary Forces, Committee on Armed Services, House of Representatives

INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

Overarching Guidance Is Needed to Advance Information Sharing

Statement of Davi M. D'Agostino, Director, Defense Capabilities and Management

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INTELLIGENCE, SURVEILLANCE, AND RECONNAISSANCE

Overarching Guidance Is Needed to Advance Information Sharing

Why GAO Did This Study

The Department of Defense (DOD) has numerous intelligence, surveillance, and reconnaissance (ISR) systems—including manned and unmanned airborne, space-borne, maritime, and terrestrial systems—that play critical roles in support of current military operations. The demand for these capabilities has increased dramatically. Today's testimony addresses (1) the challenges the military services and defense agencies face processing, exploiting, and disseminating the information collected by ISR systems and (2) the extent to which the military services and defense agencies have developed the capabilities required to share ISR information. This testimony is based on GAO's January 2010 report on DOD's ISR data processing capabilities. GAO reviewed and analyzed documentation, guidance, and strategies of the military services and defense agencies in regard to processing, exploiting, and disseminating ISR data as well as information-sharing capabilities. GAO also visited numerous commands, military units, and locations in Iraq and the United States.

What GAO Recommends

In the January 2010 report, GAO recommended that DOD develop overarching guidance for sharing intelligence information and that the military services develop plans with timelines that prioritize and identify the types of ISR data they will share. DOD agreed with these recommendations.

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What GAO Found

The military services and defense agencies face long-standing challenges with processing, exploiting, and disseminating ISR data, and DOD has recently begun some initiatives to address these challenges. First, since 2002, DOD has rapidly increased its ability to collect ISR data in Iraq and Afghanistan, although its capacity for processing, exploiting, and dissemination is limited. Second, transmitting data from ISR collection platforms to ground stations where analysts process, exploit, and then disseminate intelligence to users requires high-capacity communications bandwidth. However, bandwidth can be limited in a theater of operations by the satellite and ground-based communication capacity, and this in turn affects the ability to send, receive, and download intelligence products that contain large amounts of data. Third, shortages of analytical staff with the required skill sets hamper the services' and defense agencies' abilities to exploit all ISR information being collected, thus raising the risk that important information may not be available to commanders in a timely manner. DOD is developing and implementing initiatives to enhance its processing, exploitation, and dissemination capabilities, such as increasing personnel, but its initiatives are in the early stages of implementation and it is too soon to tell how effective they will be in addressing current challenges.

DOD is taking steps to improve the sharing of intelligence information across the department, but progress is uneven among the military services. DOD began plans for its Distributed Common Ground/Surface System (DCGS), an interoperable family of systems that will enable users to access shared ISR information in 1998. DOD subsequently directed the military services to transition their service-unique intelligence data processing systems into DCGS and each of the military services is at a different stage. While the Air Force and the Navy each plan to have a fully functional version of DCGS by the end of fiscal years 2010 and 2013, respectively, the Army does not expect to have a fully functional system until 2016. The Marine Corps has not yet established a completion date for the full operational capability of its DCGS. To facilitate the sharing of ISR data on this system, DOD developed the DCGS Integration Backbone, which provides common information standards and protocols. Although the services are responsible for managing their DCGS programs and conforming to information-sharing standards, according to the Office of the Under Secretary of Defense for Intelligence and military service officials, DOD has not developed overarching guidance, such as a concept of operations that provides direction and priorities for sharing intelligence information within the defense intelligence community. Without this overarching guidance, the services lack direction to set their own goals and objectives for prioritizing and sharing ISR information and therefore have not developed service-specific implementation plans that describe the prioritization and types of ISR data they intend to share. Moreover, the inability of users to fully access existing information contributes to the increasing demand for additional ISR collection assets.

_____ **United States Government Accountability Office**

Mr. Chairmen and Members of the Subcommittees:

Thank you for the opportunity to discuss GAO's recently issued report on the Department of Defense's (DOD) intelligence, surveillance, and reconnaissance (ISR) data processing capabilities.[1] DOD's numerous ISR systems—including manned and unmanned airborne, space-borne, maritime, and terrestrial systems—play critical roles in supporting military operations as well as commanders' force protection requirements. In Iraq and Afghanistan, commanders at all levels depend on timely and accurate ISR information on their adversaries' tactics, capabilities, and vulnerabilities to plan military operations. The success of ISR systems has led to a dramatic increase in demand for more ISR systems to collect data, and DOD continues to invest in ISR assets, requesting approximately $6.1 billion in fiscal year 2010 for new unmanned aircraft system capabilities alone. However, a November 2008 Joint Defense Science Board/Intelligence Science Board Task Force report on integrating sensor-collected intelligence[2] concluded that the rapid increase in collected information overwhelms current ISR capabilities and much of the collected data is never analyzed.

We have previously reported on DOD's challenges associated with ISR integration, requirements, tasking, and governance. For example, in December 2005, we reported that some sensors, communications equipment, and weapons associated with one type of unmanned aircraft were not always compatible with other unmanned aircraft.[3] In April 2007, we testified that although DOD had initiatives under way to improve integration of ISR assets, it had not comprehensively identified future ISR requirements, set funding priorities, or established mechanisms to

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[1]GAO, *Intelligence, Surveillance, and Reconnaissance: Establishing Guidance, Timelines, and Accountability for Integrating Intelligence Data Would Improve Information Sharing*, GAO-10-265NI (Washington, D.C.: Jan. 22, 2010). This report is not available through GAO's Web site. Copies of this report are available upon request by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

[2]Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, *Report of the Joint Defense Science Board/Intelligence Science Board Task Force on Integrating Sensor-Collected Intelligence* (Washington, D.C., November 2008).

[3]GAO, *Unmanned Aircraft Systems: DOD Needs to More Effectively Promote Interoperability and Improve Performance Assessments*, GAO-06-49 (Washington, D.C.: Dec. 13, 2005).

measure ISR integration progress.[4] In July 2007, we reported that DOD had not been able to fully optimize the use of its unmanned aircraft system assets because it lacked an approach to allocating and tasking them that considered the availability of all assets in determining how best to meet warfighter needs and that DOD lacked metrics to fully evaluate the success of its unmanned aircraft system missions.[5] Moreover, in March 2008, we reported that DOD's ISR Integration Roadmap did not include a long-term view of what capabilities were required to achieve strategic goals and did not provide detailed information that would make it useful as a basis for deciding alternative investments.[6] In July 2009, we reported that while several unmanned aircraft programs had achieved airframe commonality, most were pursuing service-unique subsystems, sensors, communications equipment, and weapons and ground control stations.[7] Further, we are also evaluating DOD's efforts to support its increasing inventory of unmanned aircraft systems, including whether it has sufficient plans and strategies for providing the necessary personnel, facilities, communications infrastructure, training, and other elements.

My testimony today is based on our January 2010 report on ISR processing capabilities[8] and will discuss (1) the challenges the military services and defense agencies face processing, exploiting, and disseminating the information collected by ISR systems and (2) the extent to which the military services and defense agencies have developed the capabilities required to share ISR information. I will conclude with some observations regarding our recommendations and DOD's response to our recommendations.

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[4]GAO, *Intelligence, Surveillance, and Reconnaissance: Preliminary Observations on DOD's Approach to Managing Requirements for New Systems, Existing Assets, and Systems Development*, GAO-07-596T (Washington, D.C.: Apr. 19, 2007).

[5]GAO, *Unmanned Aircraft Systems: Advance Coordination and Increased Visibility Needed to Optimize Capabilities*, GAO-07-836 (Washington, D.C.: July 11, 2007).

[6]GAO, *Intelligence, Surveillance, and Reconnaissance: DOD Can Better Assess and Integrate ISR Capabilities and Oversee Development of Future ISR Requirements*, GAO-08-374 (Washington, D.C.: Mar. 24, 2008).

[7]GAO, *Defense Acquisitions: Opportunities Exist to Achieve Greater Commonality and Efficiencies among Unmanned Aircraft Systems*, GAO-09-520 (Washington, D.C.: July 30, 2009).
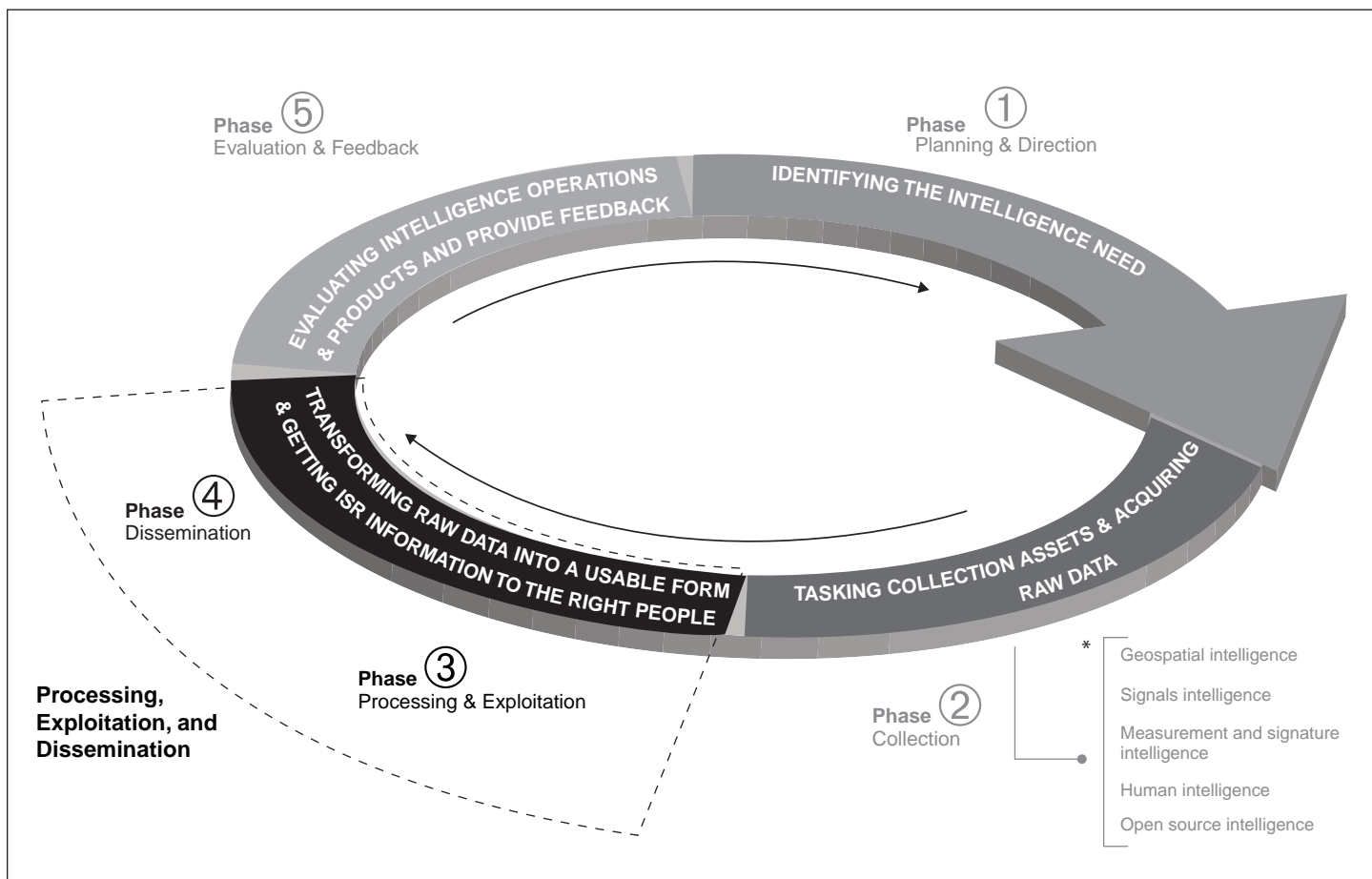
[8]GAO-10-265NI.

In conducting our audit work to support our January 2010 report, we reviewed and analyzed policies, guidance, strategies, and assessments of the military services and defense agencies in regard to processing, exploiting, and disseminating ISR data as well as their information sharing capabilities. We also interviewed officials at the Office of the Under Secretary of Defense for Intelligence; the Joint Staff; all four military services; the National Security Agency; the National Geospatial-Intelligence Agency; and numerous commands, military units, and locations in Iraq and the United States. Our work on that report was conducted from September 2008 to December 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

To be most useful to the warfighter, intelligence data must be collected, analyzed, and shared appropriately in a timely manner.[9] The intelligence data processing cycle is commonly described in five phases: (1) planning and direction, (2) collection, (3) processing and exploitation, (4) dissemination, and (5) evaluation and feedback. However, in implementation the cycle is tailored to mission needs, so the phases may not always be performed in order. For example, information collected from an unmanned aircraft system may be disseminated directly to the user, without undergoing detailed processing and exploitation. Figure 1 depicts the intelligence data processing cycle. My testimony today focuses on the processing, exploitation, and dissemination of ISR information, shown in figure 1 as steps 3 and 4 of the intelligence data processing cycle.

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[9]The process of converting data into usable intelligence and disseminating it to users in a suitable format is commonly referred to as processing, exploitation, and dissemination.

Figure 1: The Intelligence Data Processing Cycle

Phase ⑤ Evaluation & Feedback

Phase ① Planning & Direction

EVALUATING INTELLIGENCE OPERATIONS & PRODUCTS AND PROVIDE FEEDBACK

IDENTIFYING THE INTELLIGENCE NEED

Phase ④ Dissemination

TRANSFORMING RAW DATA INTO A USABLE FORM & GETTING ISR INFORMATION TO THE RIGHT PEOPLE

TASKING COLLECTION ASSETS & ACQUIRING RAW DATA

Phase ③ Processing & Exploitation

Processing, Exploitation, and Dissemination

Phase ② Collection

* Geospatial intelligence

Signals intelligence

Measurement and signature intelligence

Human intelligence

Open source intelligence

Source: GAO analysis of the intelligence process.

Analysts who are responsible for processing, exploiting, and disseminating ISR data can only use collected intelligence data if data are visible to them. Making ISR data discoverable in this way can be accomplished through meta-data tagging—a process in which data are described through other data (meta-data) that are usually produced at the time the data of interest are created. For example, a camera may create meta-data for a photograph, such as date, time, and lens settings. The photographer may add further meta-data, such as the names of the subjects. The process by which information is meta-data tagged depends on the technical capabilities of the systems collecting the information. Most ISR systems do not automatically meta-data tag the ISR data when they are transferred from the sensor to the ground station for processing and exploitation

because most of these systems were developed prior to DOD's emphasis on enforcing meta-data standards. Since the sensors on these legacy systems are not able to meta-data tag automatically, it is up to each of the military services to prioritize the cataloging of the ISR data manually after collection.

Military Services and Defense Agencies Face Long-standing Challenges with Using ISR Data and Recognize the Need to Address These Challenges

The military services and defense agencies face three long-standing challenges with processing, exploiting, and disseminating ISR data. First, since 2002, DOD has rapidly increased its ability to collect ISR data in Iraq and Afghanistan; however, its capacity for processing, exploiting, and dissemination is limited and has not kept pace with the increase in collection platforms and combat air patrols. For example, the Air Force has substantially increased the number of combat air patrols that ISR collection platforms are performing in the U.S. Central Command theater of operations. Specifically, the number of combat air patrols flown by the Air Force's Predator and Reaper unmanned aircraft systems has increased from 13 to 36 since 2007. Moreover, in the 2010 Quadrennial Defense Review Report,[10] DOD stated that it will continue to expand the Predator and Reaper combat air patrols to 65 by fiscal year 2015. This increase in data collection will also increase the burden on the Air Force's ground processing system, which processes, exploits, and disseminates the ISR information collected by these platforms.

Second, transmitting data from ISR collection platforms to ground stations where analysts process, exploit, and then disseminate intelligence to users requires high-capacity communications bandwidth. However, bandwidth can be limited in a theater of operations by the satellite and ground-based communication capacity. An insufficient amount of bandwidth affects the ability to send, receive, and download intelligence products that contain large amounts of data. For example, intelligence products derived from ISR geospatial data have high bandwidth requirements—the higher the resolution of the product, the longer the transmission time via a given bandwidth. DOD officials have acknowledged that limited bandwidth is a continual challenge in Iraq because of the warfighter's reliance on

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[10]Department of Defense, *Quadrennial Defense Review Report* (Washington, D.C., Feb. 1, 2010).

geospatial data. GAO and others have reported that DOD continues to face a growing need for communications bandwidth in combat operations.[11]

Third, the military services and defense agencies are challenged by shortages in the numbers of analytical staff available to exploit all of the electronic signals[12] and geospatial ISR information being collected, raising the risk that important information may not be analyzed and made available to commanders in a timely manner. For example, according to U.S. Central Command officials, the command exploits less than one-half of the electronic signals intercepts collected from the Predator. According to DOD officials, finding native speakers of the collected languages to successfully translate and exploit data collected in those foreign languages is difficult, and training language analysts takes time and is difficult to manage with the deployment schedule. In addition, language analysts who translate and exploit electronic signals intelligence data must qualify for security clearances that require rigorous background examinations. The National Security Agency has experienced difficulties in hiring language analysts who can obtain clearances and have the appropriate skill levels in both English and the language for translation.

DOD has recognized the need to enhance its processing, exploitation, and dissemination capabilities and is developing and implementing initiatives to do so, but its initiatives are in the early stages of implementation and it is too soon to tell how effective they will be in addressing current challenges. For example, in the short term, DOD has placed its priority for processing, exploitation, and disseminating electronic signals intelligence on the information collected in Afghanistan because the Commander of U.S. Central Command has designated those missions as a high priority. In the long term, DOD has taken several actions intended to sustain, expand, and improve processing, exploitation, and dissemination capabilities. For example, DOD has studies, such as an ISR force-sizing study, under way

[11]GAO, *Department of Defense Actions to Modify its Commercial Communications Satellite Services Procurement Process*, GAO-06-480R (Washington, D.C.: Apr. 17, 2006), and *Space Acquisitions: Actions Needed to Expand and Sustain Use of Best Practices*, GAO-07-730T (Washington, D.C.: Apr. 19, 2007). Congressional Research Service, *Defense Program Issue: Global Information Grid, Bandwidth Expansion (GIG-BE)* (Washington, D.C., Jan. 9, 2006), and Office of the Under Secretary of Defense for Acquisition, Technology and Logistics, *Report of the Joint Defense Science Board/Intelligence Science Board Task Force on Integrating Sensor-Collected Intelligence.*

[12]Signals intelligence is information derived from intercepted communications and electronic and data transmissions.

which include examining how to improve the management of its processing, exploitation, and dissemination capabilities. However, DOD has not set dates for when all of these studies will be complete and it is too soon to know whether they will lead to the desired effect of increased support to the warfighter for current operations. The Air Force and the National Security Agency also have plans to increase analyst personnel in response to the increase in ISR collection. The Air Force, reacting to scheduled increases in Predator and Reaper combat air patrols, is planning to add personnel who process, exploit, and disseminate ISR data. The National Security Agency also has taken steps to address shortages in language analyst personnel. For example, to better target its hiring effort for language analysts the agency is using U.S. Census Bureau data to locate centers of populations that contain the language skills needed to translate and exploit the foreign languages that are collected. According to National Security Agency officials, these efforts have helped increase the number of language analysts available to process and exploit collected signals intelligence data. DOD is also working on developing technical solutions to improve processing, movement, and storage of data. For example, files from wide-area sensors have to be saved to a computer disk and flown back to the United States for exploitation and dissemination because current networks in the theater of operations cannot handle the large amounts of data these sensors collect. U.S. Joint Forces Command is currently designing and testing technology already in use by the commercial entertainment industry to improve storage, movement, and access to full motion video data from wide-area sensors.

DOD Is Taking Steps to Improve Intelligence Information Sharing, but Progress Is Uneven

Although DOD has recognized the need for maximizing the efficiency and effectiveness of the information it collects and has been taking steps to increase information sharing across the defense intelligence community, progress has been uneven among the military services. DOD began plans for its Distributed Common Ground/Surface System (DCGS), an interoperable family of systems that will enable users to access shared ISR information, in 1998. DOD subsequently directed the military services to transition their service-unique intelligence data processing systems into DCGS and each of the military services is at a different stage. As shown in table 1, the Air Force and the Navy each plan to have a fully functional version of DCGS by the end of fiscal years 2010 and 2013, respectively, and the Army does not expect to have a fully functional system until 2016. The Marine Corps has not yet established a completion date for the full operational capability of its DCGS.

Table 1: Status of Military Services' DCGS Programs

Military service	Reached milestone B[a]	Full operational capability date
Air Force	Yes	2010
Navy	Yes	2013
Army	Yes	2016
Marine Corps	No	Undetermined

Source: GAO analysis of military services' data.

[a]Milestone B is the second major decision point in the acquisition process and comes after the technology development phase.

DOD has developed a system of standards and protocols, called the DCGS Integration Backbone (DIB), which serves as the foundation for interoperability between each of the four military services' DCGS programs. However, the services have not completed the process of prioritizing and tagging the data they want to share in accordance with these standards and protocols or developed timelines to do so. As a result, the services are not sharing all of their collected ISR data.

- Although the Air Force has the capability to share some Air Force-generated ISR information with other DOD users through the DIB standards and protocols, it has not developed timelines or taken steps to prioritize the types of additional data that should be shared with the defense intelligence community.
- The Army also has the capability to share some of its intelligence data with other users, but has experienced difficulties tagging all of its data because of its large inventory of legacy ISR systems. Moreover, the Army has not established timelines for sharing data.
- The Navy and Marine Corps are not currently tagging all of the ISR data they intend to share and have neither developed timelines nor taken steps to prioritize the types of data that should be shared with the defense intelligence community.

The Under Secretary of Defense for Intelligence has responsibility for ensuring implementation of DOD intelligence policy, including monitoring the services' progress toward interoperability. Although the services are responsible for managing their DCGS programs and conforming to information-sharing standards, according to Office of the Under Secretary of Defense for Intelligence and military service officials, DOD has not developed overarching guidance, such as a concept of operations that provides needed direction and priorities for sharing intelligence information within the defense intelligence community. Without this overarching guidance, the services lack direction to set their own goals

and objectives for prioritizing and sharing ISR information and therefore have not developed service-specific implementation plans that describe the prioritization and types of ISR data they intend to share with the defense intelligence community. For example, a concept of operations could provide direction to the military services and defense agencies to select data to prioritize for meta-data tagging and sharing, such as electronic signals intelligence data. As a result, it is not clear how much of the collected data are not being shared. Until DOD identifies what types of ISR information should be shared and assigns priorities for sharing data, it is unclear whether mission-critical information will be available to the warfighter. In addition, the inability of users to fully access existing information in a timely manner is a contributing factor to the increasing demand for additional ISR collection assets.

Therefore, in our January 2010 report, we recommended that the Secretary of Defense take the following two actions:

- Direct the Under Secretary of Defense for Intelligence, in coordination with the Chairman of the Joint Chiefs of Staff and the Secretaries of the Army, Navy, and Air Force, to develop guidance, such as a concept of operations that provides overarching direction and priorities for sharing intelligence information across the defense intelligence community.
- Direct the Secretaries of the Army, Navy, and Air Force to develop service-specific implementation plans, consistent with the concept of operations, which set timelines and outline the prioritization and types of ISR data they will share with the defense intelligence community through the DIB.

In written comments on our report, DOD agreed with our recommendations overall and stated that there is guidance either issued or in development to address our recommendations. However, this guidance does not fully address the intent of our recommendations, and we believe additional guidance is necessary.

Concluding Remarks

DOD officials cite ISR as vital to mission success in Iraq and Afghanistan, and Congress has responded by funding additional ISR assets. However, until all participants in the defense enterprise successfully share ISR information, inefficiencies will hamper the effectiveness of efforts to support the warfighter, and ISR data collection efforts may be unnecessarily duplicative. While the focus of my testimony has been on the processing, exploiting, and disseminating of ISR data, our prior work has also shown that collection taskings are fragmented in theater and

visibility into how ISR assets are being used is lacking. These challenges increase the risk that operational commanders may not be receiving mission-critical ISR information, which can create the perception that additional collection assets are needed to fill gaps.

Mr. Chairmen and members of the subcommittees, this concludes my prepared statement. I would be happy to answer any questions that you may have at this time.

Contacts and Acknowledgments

For further information regarding this testimony, please contact Davi M. D'Agostino at (202) 512-5431 or dagostinod@gao.gov. In addition, contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this statement. Individuals who made key contributions to this testimony are Margaret G. Morgan and Marc J. Schwartz, Assistant Directors; Grace A. Coleman; Gregory A. Marchand; Erika A. Prochaska; Kimberly C. Seay; and Walter K. Vance. In addition, Amy E. Brown; Amy D. Higgins; Timothy M. Persons; and Robert Robinson made significant contributions to the January 2010 report that supported this testimony.